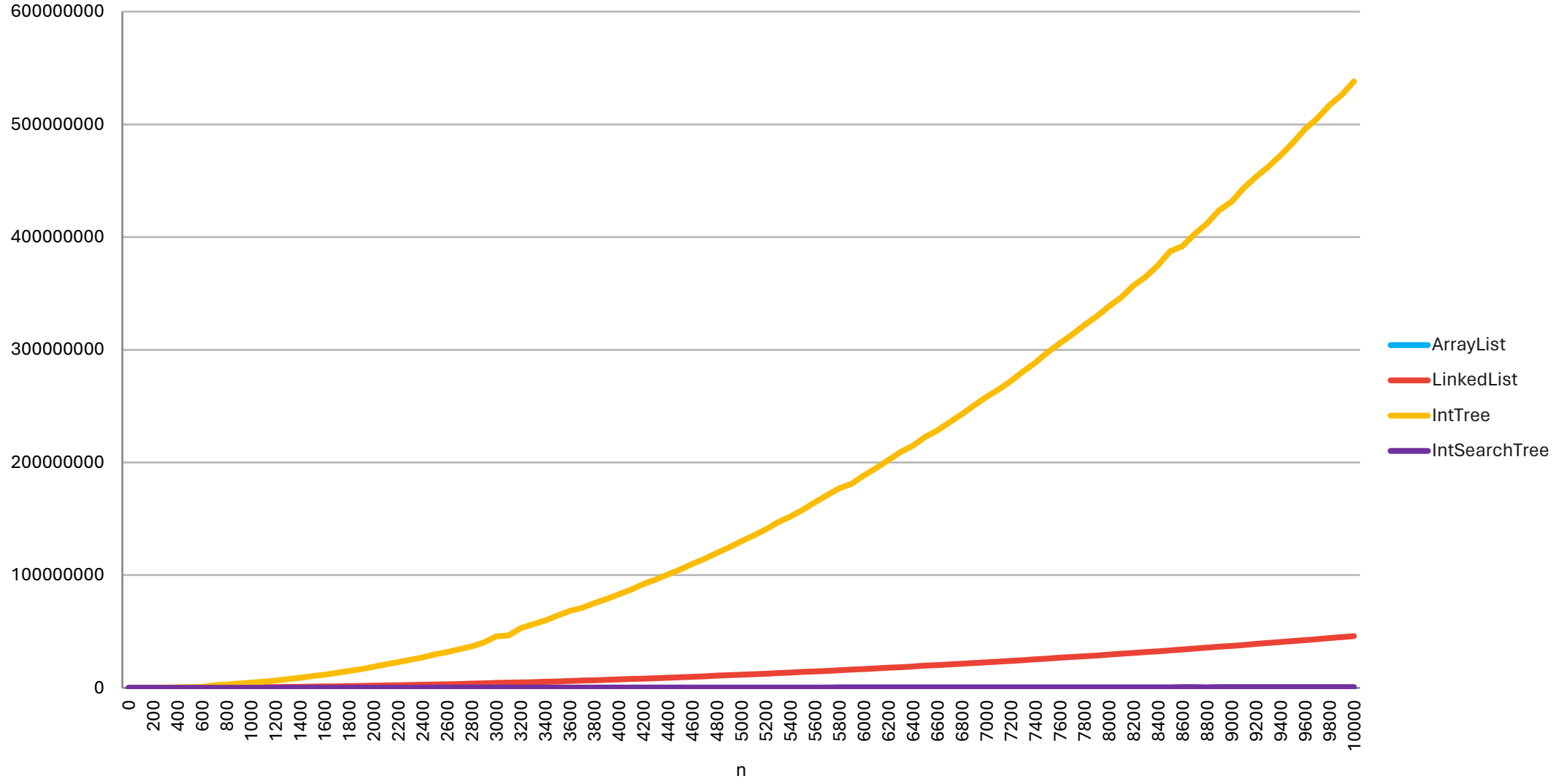
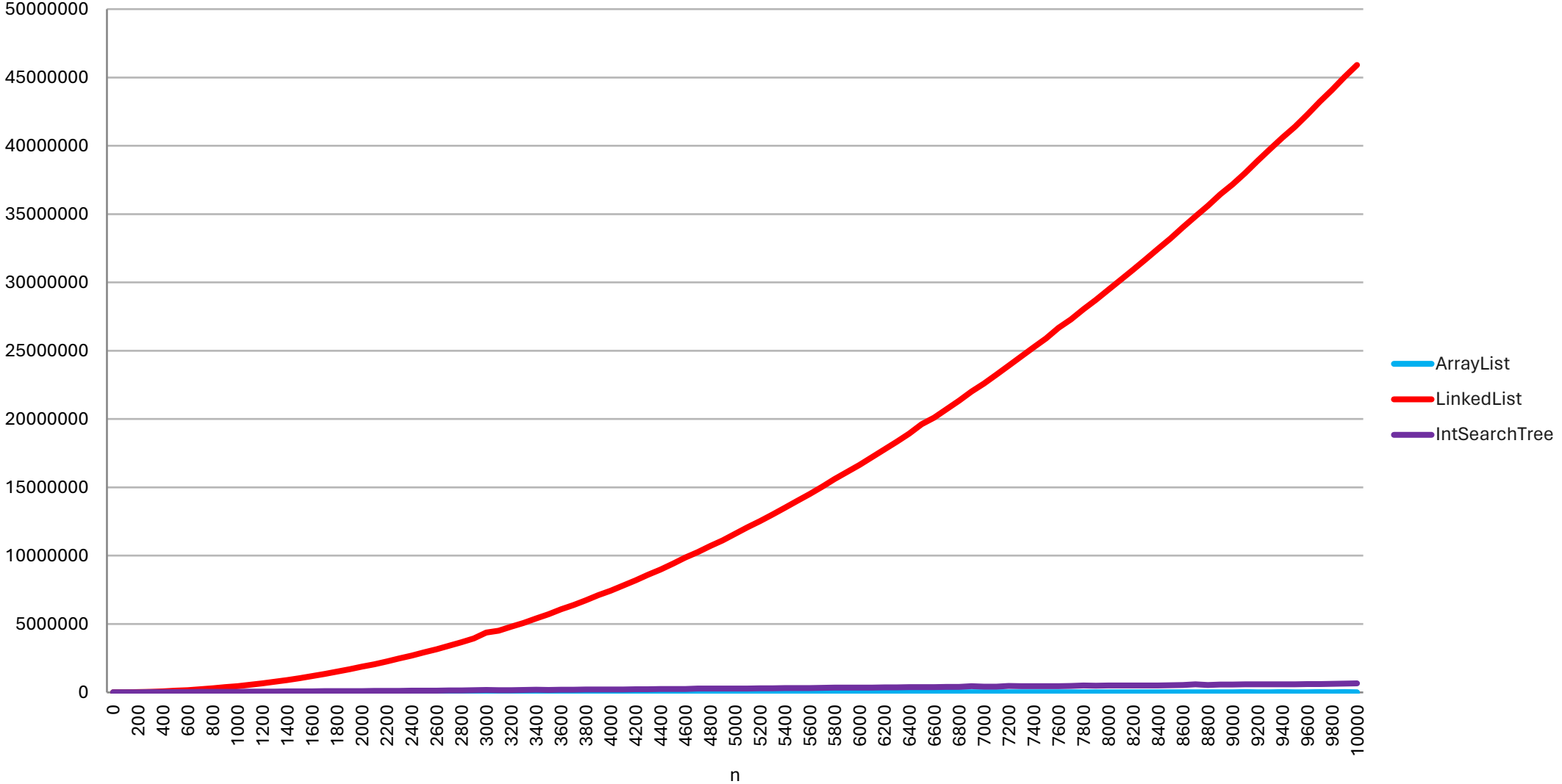


Running Time

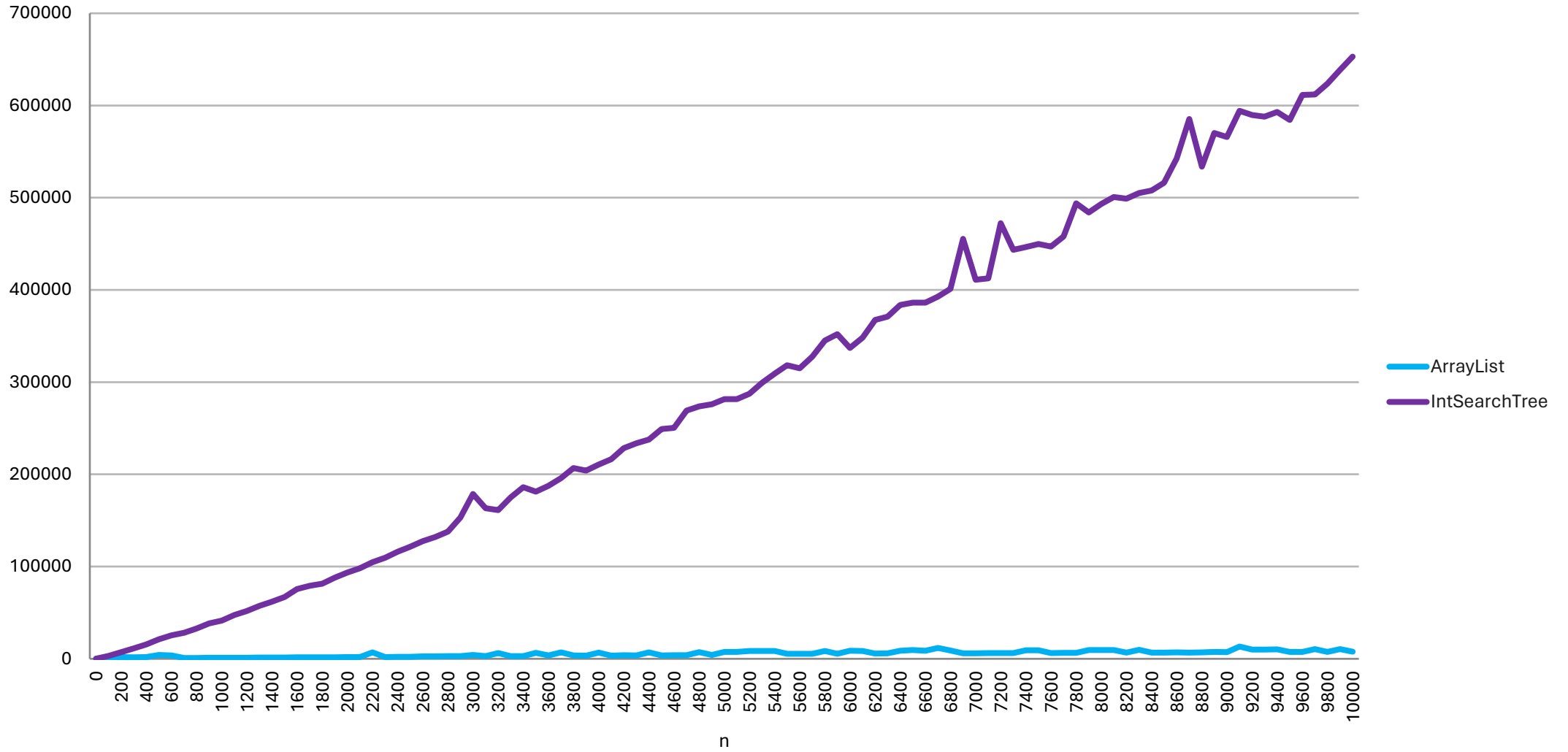
All Data Structures (time to add n elements)



ArrayList, LinkedList and IntSearchTree (time to add n elements)



ArrayList IntSearchTree (time to add n elements)



Benchmarking

- Running a program to see how long it takes
- Downsides:

Running Time Analysis

- Count the number of “primitive operations” the code will do
 - Expressed in terms of the size of the input (typically called n)
- Put that count into a “bucket” to categorize its running time
 - To find bucket: ignore all constant coefficients, ignore all terms except the biggest one containing n
 - Examples of buckets:
 - $O(1)$: constant
 - $O(n)$: linear
 - $O(n^2)$: quadratic